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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/955,043 | 09/19/2001 | Satoshi Kaiho | 016907/1292 | 8502 |
| 22428 | 7590 | 12/23/2005 | EXAMINER | |
| FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007 | | | | PHAM, HAI CHI |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2861 | |

DATE MAILED: 12/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/955,043 | KAIHO, SATOSHI | |
| | Examiner | Art Unit | |
| | Hai C. Pham | 2861 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 12 October 2005.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 4 and 7-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 4,7,8,11 and 12 is/are rejected.
- 7) Claim(s) 9 and 10 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Makino (U.S. 5,151,811) in view of Suzuki (JP 5-119276).

Makino, previously cited prior art, discloses a scanning optical device comprising a housing (optical box 10), a light emitting section (semiconductor laser 1), which emits a laser beam, a polygon mirror (2) provided in the vicinity of a side in the housing, which includes a plurality of reflection planes along a main scanning direction to deflect the laser beam in the main scanning direction (the polygon mirror 2 being located at one left side of the housing) (Figs. 1b and 2a), and a projection (pin 46) provided on an outer surface of the housing between the polygon mirror and the other end of the housing, wherein the housing is rotated about the projection (Fig. 6) (col. 7, lines 4-19).

However, Makino fails to teach the reflecting mirror reflecting the laser beam toward the photosensitive drum.

Regardless, it is well known in the art to dispose the photosensitive drum either horizontally with respect to the optical box or below the optical box, wherein the

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second configuration is a more compact configuration, which would require the incorporation of a reflecting mirror, as evidenced by Suzuki at Figs. 2 and 5, respective, where a reflecting mirror (7) is inserted at the other end of the optical box (10) with respect to the polygon mirror (4), so as to reflect the laser beam toward the photosensitive drum (20) located outside of and underneath the optical box.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to rearrange the photosensitive drum as well as to incorporate the reflecting mirror in the device of Makino as taught by Suzuki. The motivation for doing so would have been to provide a more compact configuration for the optical scanning device.

3. Claims 4, 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makino in view of Suzuki and Yamakawa (U.S. 6,243,128).

Makino in view of Suzuki discloses all the basic limitations of the claimed invention (please refer to the above paragraph 2 for the rejection of similar limitation), but except for the developing unit, the transfer unit, and the fixing device (claim 4).

However, Yamakawa discloses an image forming apparatus comprising an optical box (or housing 16) holding a laser unit (14), a polygon mirror (1) and the scanning lenses (2 and 3), the housing being rotatable around the pin (11a) provided on the housing so as to correct the tilt of the scan line with respect to the longitudinal axis of the photosensitive drum (21). Yamakawa further discloses a developing device

(128), a transfer device (130) and a fixing device (138), which are pertinent to any electrophotographic printing device.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the developing device, the transfer device and the fixing device in the optical scanning device of Makino since Yamakawa teaches this to be well known in the art for forming a visible toner image in any electrophotographic printing device.

Although Makino teaches using f-θ lenses (3, 4) for scanning the deflected light beam onto the surface of the photosensitive drum, Makino does not however explicitly disclose the correction lens among the f-θ lenses for correcting variations in the tilt of the plural reflection planes (claim 12).

Regardless, it is well known in the art that the scanning lenses while performing the f-θ functions of scanning the deflected laser beam by converging the laser beam into spotlight with constant linear velocity onto the scanned surface, also serve to correct a surface tilt error generated in the polygon mirror as evidenced by Yamakawa, which teaches the scanning lenses (3, 4, 15) accomplishing f-θ characteristics with the last lens (4) serving as a correction lens for correcting surface tilt of the polygon mirror (col. 5, lines 45-61).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the correcting lens among the f-θ lenses of Makino as taught by Yamakawa since Yamakawa teaches this to be well known in the

art to include the surface-tilt correction lens so as to reduce the pitch variation in the scanning lines.

With regard to claim 7, Makino teaches a frame (mounting base 36) having a hole (not shown) into which the projection (pin 46) is fitted, which supports the housing of the exposure device in such a manner that the housing can rotate about the projection (the mounting base 36 for mounting the optical box 37, wherein the locating pin is integral to the optical box 37 and being fitted into the mounting base 36 through a hole as shown in Fig. 6) (col. 7, lines 4-19).

Allowable Subject Matter

4. Claims 8-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
5. The following is a statement of reasons for the indication of allowable subject matter: the primary reason for the indication of the allowability of claim 8 is the inclusion therein, in combination as currently claimed, of the limitation "the central axis of the projection passes through an exposure light spot of the laser beam irradiated on the image carrier", which is not found taught by the prior art of record considered alone or in combination.

Claims 9-10 are allowable because of their dependency from claim 8 above.

Response to Arguments

6. Applicant's arguments with respect to claims 4, 7 and 11-12 have been considered but are moot in view of the new grounds of rejection as presented in this Office action.

Conclusion

7. Applicant's amendment, which changed the scope of the base claims, necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER
December 14, 2005